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Impact of Rurality on Pediatric Healthcare Access in the United States: A Literature Review

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HPRB 5010: Research Design

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April 22, 2025

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Research Question

How does rurality impact pediatric healthcare access in the United States?

Introduction

Rural areas are defined by a variety of measures, of which often include population density or housing units. The population threshold to define rural is 5,000 residents, with 2,000 housing units or less. This contrasts urban areas, which are defined by at least 5,000 residents with 2,000 or more housing units (USDA, 2025a). Rural areas can further be characterized by geographic distance from neighboring, populous areas (USDA, 2025a). The distanced nature of rural communities contributes to social isolation, economic challenges, unattainable wellbeing support, and less access to healthcare (Munoz, 2023).

A lack of economic diversity in rural areas reinforces poverty in rural communities. The poverty rate of rural America is 15.4%, as compared with 12.8% nationwide (Benson, 2022; USDA, 2025b). Poverty among rural areas leads to an increased dependence on resources of which oftentimes are not accessible in the community (Hales, n.d.). A deficit of resources, such as a present workforce, health insurance, transportation, and health literacy leads to numerous health disparities in rural areas (RHIhub, 2025c). Poor health education serves as a diminished resource due to the heightened poverty among rural communities, leading to increased risk behaviors (Tulane University, 2021). Prevalent risk behaviors, such as lower seat belt use, can indirectly lead to the notable poor health outcomes seen in rural communities (CDC, 2024). To combat adverse health outcomes, it is imperative to focus on the health of the upcoming generation of rural children.

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There is a heightened health risk among rural populations compared to urban populations, with increased risk of premature mortality, cardiovascular disease, cancer, lung disease, and stroke (NIH, 2022). The mortality and overall health among the rural population can be attributable to rural specific conditions, including an overall older population, increased obesity, increased smoking behaviors, and high blood pressure (RHIhub, 2025c). Due to mortality and minimal resources, rural areas across the U.S. have seen negative population growth since 2010 (Johnson, 2022). In rural areas, the age-adjusted death rate is 7% higher than that of urban areas (RHIhub, 2025c). Death due to cardiovascular disease is 16.9% higher in rural areas compared to urban areas. The rate for cardiovascular disease is 189.1 per 100,000 in rural areas, substantially higher than the rate of 156.3 per 100,000 in urban areas (Curtin & Spencer, 2021). Additionally, among rural populations, death due to cancer is 18.5% higher, death due to lung disease is 44.1% higher, and death due to stroke is 10.4% higher when compared to urban populations (RHIhub, 2025c). The cancer rate in rural areas is 164.1 per 100,000, compared to the rate of 142.8 per 100,000 in urban areas. The rate of lung disease in rural areas is 52.5 per 100,000, compared to the rate of 35.4 per 100,000 in urban areas (Curtin & Spencer, 2021).

Children living in rural areas are faced with unique interpersonal factors, such as living with someone suffering from addiction or mental illness, enduring parental violence, and having at least one incarcerated parent (HRSA, 2020). Furthermore, rural children face increased lack of caregiver health, emotional support, social support, healthy family interactions, and positive surrounding neighborhoods when compared to urban children (Bates, 2023). In such a developmental time, these factors directly lead to poor pediatric wellbeing and therefore contribute to adverse health outcomes in children.

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In relation to their urban counterparts, children living in rural areas are impaired by shorter life expectancy and an elevated risk of poor health outcomes such as obesity, depression, anxiety, and behavioral issues (HRSA, 2020; Workman, 2025). These health disparities cause rural children to have a 25% higher mortality rate than children living in more populated areas (Bettenhausen et al., 2021). Rural children are increasingly vulnerable as they are in critical points of development, in which poor health can follow them as they reach adulthood.

Rural living imposes specific and harsh effects on pediatric healthcare access. To address this, it is essential to acknowledge the depth of pediatric healthcare. Pediatric healthcare is widely encompassing and includes any practice used to meet the health needs of infants, children, and adolescents (Boudreau et al., 2022). Pediatric health and healthcare can be impacted by a number of contributors; therefore, a wide range of services are necessary to ensure optimal health for children. These services include, but are not limited to, specialist care, emergency care, trauma services, and physical and mental preventative services.

Past studies have focused on the socioeconomic status of rural adults and their type of insurance coverage, the deficits of specific services in rural populations, and the variation of health outcomes between rural and urban areas. One area that is relatively understudied is how rurality impacts access to specifically pediatric care. By understanding rurality's impact on pediatric health access, necessary and targeted interventions can be implemented for children living in rural areas. The purpose of this literature review is to explore how rurality impacts access to pediatric care in the United States.

Methods

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For this literature review, the databases employed included Web of Science, PubMed, and CINAHL. The Web of Science database offers academic, peer reviewed journals with a range of scientific focus from social science to humanities. PubMed contains academic, peer-reviewed journals relating to biomedical, life science, and health improvement. CINAHL database offers a plethora of journals and articles regarding nursing and allied health research. This database encompasses both rural health journals and pediatric journals, providing numerous articles pertaining to pediatric healthcare access in rural areas.

Inclusion and Exclusion Criteria

All searchers used strict inclusion and exclusion criteria to ensure that only high-quality research was included in this review. All searches had inclusion criteria of publication within 10 years, academic journals, full-text availability, and United States population focus. Each database had variation in ability to select inclusion and exclusion criteria. The PubMed search allowed articles to be filtered for age, of which only young children, children, and adolescents aged 2-18 were included as the target population. Web of Science and CINAHL did not offer this advanced search age range. Demographics such as race, ethnicity, gender, and sex were not taken into consideration as they are not relevant in the broad discussion of rural children. The exclusion criteria included literature reviews, systematic reviews, and meta-analysis. Articles specific to non-rural populations were also excluded.

Using the search terms “pediatric,” “health,” “rural,” and “access” ultimately yielded the literature used in this review. These terms are extremely relevant in understanding of rural pediatric health as it pertains to access. Through each database, the terms were used in varying orders and evolved in specificity in order to obtain articles containing crucial insight. The yielded articles explore the health disparities seen among rural children and uses data to discuss how

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rural living is the main contributor. After entering the applied search terms into each database, a thorough examination of each provided article's title and abstract was performed. This introduced directly relevant articles of which were suitable for this review.

For the Web of Science search, the first search terms were "pediatric health care disparities rural U.S.," which yielded 12 results. These initial search terms were used to then formulate a more inclusive search. To broaden results, the revised search terms were "rural* AND (risk OR risk factor) pediatric health care access* AND (U.S. OR United States)." This yielded 55 results and offered articles with variation in their phrasing on the topic. Out of the provided articles, 10 were used for this literature review. Inclusion criteria for the Web of Science search included publication within 10 years and open access for provided journals. The exclusion criteria included articles published 10 years or more prior, articles focused on adults, and articles written as meta-analysis or literature reviews.

The first search terms using the PubMed database were "rural* pediatric health* access United States." This yielded only 28 results. To broaden the variety of results, the revised search terms were "rural pediatric health care." This yielded 57 results, of which were more expansive of the review's focus. Of these results, 4 articles were used in this review. Inclusion criteria included age, publication within 10 years, available full text, clinical trials, clinical studies, and randomized controlled trials. Ages included were preschool child: 2-5 years, child: 6-12 years, and adolescent: 13-18 years. The exclusion criteria were articles older than 10 years, abstract only texts, books, meta-analysis, systematic reviews, and focal age of 19 years or older.

The CINAHL database was accessed through the UGA Libraries website. The first search terms used were "pediatric AND health* AND access AND (U.S. or United States) AND rural*." This yielded 60 results, of which were tailored to each component of the research question. Out

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of the yielded results, 6 articles were chosen for this review. The inclusion criteria for the search included academic journals and publication within 10 years. The exclusion criteria were articles published 10 years or earlier, magazines, and dissertations.

Results

This literature review identifies three overarching findings that highlight how pediatric healthcare access is directly impacted by rurality. The lack of pediatric specific care, lack of preventative services, and geographic isolation imposed by rurality impairs pediatric patients' ability to access care.

Lack of Pediatric Specific Care

Within rural areas, there has shown to be a lack of providers that are able and well equipped to perform pediatric care. A study utilizing 23.2 million pediatric patients across four years shows that though 25% of rural hospitals are admitting consistent volumes of pediatric patients, rural hospitals continue to close pediatric units. Out of 1,589 rural hospitals with pediatric stays from 2009 to 2019, the presence of pediatric units decreased from 1,563 to 1,256, respectively. This represents an 8.9% decrease in pediatric availability among rural hospitals (Leyenaar et al., 2023). These hospitals are typically small and have to optimize beds for general services, leading to less pediatric specificity within the hospitals. Across 4,720 hospitals from 2008 to 2018, pediatric inpatient availability decreased by 19.1% (Cushing et al., 2021). The lack of pediatric units contributes to the minimalization of pediatric services within rural hospitals. In a longitudinal study of 5,856 pediatric patients across nine states, 29.3% of rural children received care at hospitals without pediatric services, compared to only 15.9% of urban children (Van Arendonk et al., 2024).

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With less focus on pediatric services, there is a lack of pediatric providers that are equipped to serve children. A seven-month longitudinal study of a rural hospital in Minnesota shows that pediatric patient transfer increased from rural to urban areas by 70% (Bartlett et al., 2023). The necessity for pediatric transfer from rural to urban hospitals exhibits pediatric patient's inability to receive adequate care within rural hospitals. Critical Access Hospitals (CAHs) account for 41.7% of rural hospitals, which provide limited but essential services. In a study of 1,133 CAHs, less than 12% of the staff were pediatricians or able to offer pediatric emergency services (Pilkey et al., 2019). With the absence of pediatric providers, general providers are forced to undergo pediatric training. A study of general providers across three rural hospitals shows that these providers feel discomfort in infant and pediatric assessment and thus cannot offer optimal care to pediatric patients. In a range of 36 pediatric patient simulation tasks given to providers across three rural hospitals, 94.4% of tasks needed improvement (Bayouth et al., 2018). Therefore, the lack of pediatric capability among general rural providers contributes to diminished access to optimal care for pediatric patients. In cases of necessary specialist tier assessment, five out of nine rural providers admitted that they do not use recommended or up to date tools for diagnosis. These five providers clarified their usage of the PECARN algorithm, a practice that prevents pediatric patients from obtaining potentially necessary imaging scans (Daugherty et al., 2021).

There is an additional lack of adequate specialist care in rural areas for pediatric patients, including psychiatric care, trauma care, and obstetric care. A study of 400 hospitals offering pediatric inpatient psychiatric care shows that only 40 hospitals are in rural areas or accessible by rural patients. Of these rural hospitals offering pediatric psychiatric services, there is much less progression into further psychiatric consultation, emergency treatment, and residential treatment

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as compared to urban hospitals (Cushing et al., 2024). Pertaining to trauma care, rural pediatric patients are observed to receive suboptimal care. A study of 10,951 urban and rural pediatric patients shows that rural children have a 13.2% higher rate of being undertriaged as compared to their urban counterparts. Additionally, 77% of rural children do not have access to pediatric specific trauma centers (Peng et al., 2017). Without access to trauma centers versed in pediatric care, pediatric mortality rates are heightened. A study of 61,053,482 rural and urban children shows that 99% of rural patients do not have an accessible emergency or trauma center. Due to the lack of accessible care, this study shows increased rural pediatric mortality of 8.2 deaths per 100,000, as compared to .56 deaths per 100,000 among urban children (Byrne et al., 2021). Rural infants comprise a specific pediatric population that is impaired by a lack of obstetric providers among rural areas. A retrospective study of 11,881,814 infants across rural and urban areas shows that only 25.7% of rural counties have an obstetric hospital, compared to 100% of urban counties having accessible obstetric providers (Ehrenthal et al., 2020).

Lack of Preventative Services

Children living in rural areas show an accessibility disparity through their inability to obtain necessary preventative services. A cross-sectional study of 1,557 children shows that rural pediatric patients are 15% less likely to receive an influenza vaccination due to a lack of vaccination health centers within their rural communities (Lebrun-Harris et al., 2020). Rural residency serves as a direct risk factor for children's inability to obtain and maintain obesity prevention services. A randomized trial of 1,920 children across 24 health clinics shows that the lack of consistency of well-child visits and obesity education received through these visits contributes to untreated and increased obesity in rural children (Bailey-Davis et al., 2022). Additionally, rurality contributes to a lack of necessary follow-up treatment in specialized

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preventative services. A sample of 158,969 pediatric patients encompassing the state of Kentucky exhibits that even with existing screening programs, rural pediatric patients are subjected to minimal accessibility compared to their urban counterparts. The study found that 23.8% of rural, Appalachian children did not receive follow-up testing for hearing impairments, compared to only 17.3% of urban, non-Appalachian children (Bush et al., 2014).

Preventative services available to rural children regarding mental health also remains limited. A sample of 282,232,058 urban and rural children shows that upon arrival to emergency departments, rural children are twice as likely to be recommended for transfer to a psychiatric facility as compared to urban children (Horeczko et al., 2014). This exhibits the lack of preventative mental services offered in rural areas. Therefore, when general care is obtained, there is heightened poor psychiatric standing among rural pediatric patients. Out of 480 hospitals across rural and urban populations, 43% of rural hospital pediatric transfers are due to psychiatric indication, compared to only 19.5% of urban hospital transfers (Horeczko et al., 2014). The preventative mental health services and related health education for pediatric patients remains unattainable in rural areas, leading to the notable need for transfer to psychiatric facilities.

Geographic Isolation

Rural areas are characterized by a geographical isolation, physically separating them from adequate healthcare. The geographical segregation contributes to less healthcare understandings and inability to obtain healthcare within rural communities. A cross-sectional study of 23.2 million hospitalizations shows that rural hospitals are more often forced to transfer pediatric patients compared to urban hospitals. The transportation time and thus delayed care contributes to heightened critical conditions and mortality (Leyenaar et al., 2023). A qualitative

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study of nine rural providers showed that rural providers acknowledge that their pediatric patients are unable to access necessary care due to distance and transportation barriers, with patient travel distances noted of up to 500 miles (Daugherty et al., 2021).

In terms of specialized areas of care, rural pediatric patients continue to travel increased distances to receive necessary treatment as compared to urban pediatric patients. In a study of 213 pediatric patients needing otolaryngologist consultation and treatment, rural patients had a median drive of 74.8 miles to the closest specialist, compared to a median drive of 16.8 miles for urban patients. The elevated distance to care for rural pediatric patients contributes to a 30% lower rate of surgery reception over time compared to their urban counterparts (Yan et al., 2022). In a nationwide sample of 490 healthcare sites, urban communities showed 82.1% of pediatric concussion care specialists being within 10 miles, whereas only 8.2% of specialists are within 10 miles of rural communities. Additionally, rural pediatric patients only have access to four multidisciplinary concussion clinics, compared to the 63 clinics accessible by urban pediatric patients (Powers et al., 2024). For infection care, rural pediatric patients are further forced to travel elevated distances for optimal pediatric care. A study of 251 pediatric patients across Missouri shows that the median distance for rural patients is 119 miles, compared to only 19 miles for urban patients (Whittington et al., 2023).

For pediatric patients during infancy, rurality's geographic isolation contributes to mortality. A sample of 11,881,814 urban and rural infants with 64,478 associated infant deaths shows that mortality is 22.1% higher in rural areas than urban areas. This heightened mortality is attributable to rural infants requiring NICU services that are unable to be obtained efficiently (Ehrenthal et al., 2020). The efficiency of NICU service reception is based on the distance infants must travel to receive necessary treatment; thus, long travel distance contributes to

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inadequate care. Young rural children are further impaired by lack of geographically attainable developmental support. A sample of randomly selected 21 mother-child dyads shows that 1% of rural children live within 15 miles of a lactation consultant, compared to 66% of urban children (Ray et al., 2019).

Pediatric patients residing in rural areas face a heightened distance to obtain comprehensive care compared to their urban counterparts. A study spanning eleven New York counties shows that the median one-way drive time for rural pediatric patients is 63.2 minutes, compared to 15.1 minutes for urban pediatric patients (Sommerhalter et al., 2017). Additionally, public transit only covers 2.1% of rural addresses, whereas it covers 78.9% of urban addresses. With available public transit, one-way transit time to the nearest healthcare center has a median of 324.9 minutes for rural pediatric patients, compared to 66.5 minutes for urban patients (Sommerhalter et al., 2017).

Discussion

The negative health outcomes of rural pediatric patients are directly caused by the accessibility barriers rurality imposes. Lack of pediatric specific care, lack of preventative services, and geographic isolation serve as notable impacts that rurality has on pediatric patients in their ability to obtain necessary care. The inability of children to receive proper care within rural areas exacerbates the disparities of rural pediatric patients when compared to their urban counterparts. Furthermore, these disparities caused by rurality pertain to both mental and physical health and ultimately contribute to poor health outcomes among rural children. Poor health outcomes throughout childhood are likely to continue into adulthood or cause premature mortality (National Academies of Sciences, 2023). Addressing these challenges increases focus

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on improving rural areas in terms of healthcare attainability, tailored pediatric understanding, available physicians, and transportation to care.

Implications for Practice

Rural areas impose extensive barriers that contribute to decreased accessibility of standardized, specialized, and preventative care. Implementation for accessible technology and healthcare is necessary in alleviating this disparity. This suggests acknowledgment of telemedicine as a way for children to access providers from a distance. Telemedicine enables pediatric patients to access care that involves monitoring for conditions, specialist access, and delivery of health education (RHIhub, 2025d). A telemedicine program implemented in rural Arkansas has shown to improve rural pediatric health, specifically pertaining to asthma. The intervention included 393 children and improved asthma management and medication adherence. Through the six-month implementation, the intervention group increased peak flow meter usage by 54% and increased prescription medication adherence by 9% (Perry et al., 2018). This exemplifies how telemedicine initiatives are capable of improving healthcare accessibility for rural pediatric patients, contributing to positive health behaviors and outcomes. In further development and practice, telemedicine must range in specificity to adequately serve the broad scope of healthcare needs of rural children. With widespread use of telemedicine by rural pediatric patients, the geographical burden is alleviated. Therefore, patients could have the ability to access general care, specialized care, and preventative care as necessary.

Expansion of mobile health clinics (MHCs) could further provide rural children with access to necessary care. MHCs have the capability to effectively reach rural communities and provide both advanced telehealth access and in-person healthcare treatments (Iqbal et al., 2022). Within ten months of implementation, a rural serving MHC provided 1,498 patient appointments.

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Though the mean patient age was 47.9 years old, 5.3% of appointments were well-child visits, exemplifying that MHCs have the capacity to serve rural pediatric patients. The widespread expansion of MHCs could therefore completely disintegrate rurality-imposed barriers and address preventative conditions in rural pediatric patients.

Dissemination of school-based health centers across rural schools can directly reach pediatric patients in need of care. School-based health centers offer a robust and integrated approach to pediatric healthcare, offering screening and treatment for acute and chronic conditions (Rural Health, n.d.). In the presence of school-based health centers, it is predicted that rural children would have a 10% higher attainment of general visits and would be 11% more likely to receive preventative care as immunizations (Tennyson et al., 2023). Further development and implementation of these centers would amplify pediatric access to a plethora of healthcare scopes, limiting rurality's detriment.

Rural areas have unique qualities that contribute to decreased providers offering or able to disseminate optimal pediatric care. This minimization of pediatric providers within rural areas contributes to the heightened mortality and displacement of rural children. The general lack of physicians within rural areas is largely attributable to low offered wage and distance (Ramesh & Yu, 2023). To combat the cost, the National Health Service Corps offers scholarships and loan repayment programs for providers willing to work in areas that suffer from health professional shortages (RHIhub, 2025b). These settings include urban, rural, and tribal areas. In 2022, 1,199 scholarships were awarded, allocating providers into rural communities. The rural scholarships amounted to \$142.9 million over the span of two years, which was primarily used to incentivize providers entering rural communities (Marshall, 2023). However, further specific health recruitment is needed for pediatric care. Incentivizing pediatric providers to enter rural health

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settings would increase rurality's healthcare capacity, better serving rural children in pediatric specific preventative services, emergency care, and specialist care.

Regionally, there has been slight advancements in rural provider support. KidsABC is an example of a such support, assisting rural pediatricians and family practitioners in practice and training (Rural Health, 2025). Free practice and training for willing rural providers allows them to gain understanding on how to effectively handle pediatric patients in the absence of pediatric specific providers. In rural areas where pediatric specialty is limited and decreasing, offering services to the existing providers is necessary in order to achieve rural children's optimal health. To facilitate consistent growth in pediatric specificity among rural areas, widespread implementation of supportive services across the rural U.S. is essential.

Inability to physically get to healthcare services results in many rural pediatric patients receiving inadequate or a complete lack of care. This suggests the need for strengthening of community-based transportation services. Community-based transportation services have the capacity to directly increase pediatric healthcare access by eliminating travel barriers, such as cost to travel (RHIhub, 2025e). Similar implemented services, such as rural Missouri's HealthTran, has shown to support 1,700 rural Americans across 45 counties and improve their ability to obtain healthcare (RHIhub, 2025a). With heightened access to care, pediatric patients can obtain necessary preventative care and support, improving rural children's health outcomes. Geographically, specialist care remains the most difficult for rural pediatric patients to obtain. Therefore, governmental health officials must be recruited to facilitate health clinic transportation. A federal health clinic in Mississippi has exemplified how the reception of state funding aids in the planning and providing of transportation for patients (Grant et al., 2016). Twenty years following funding, the initial clinic transportation has expanded into an inclusive

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rural transportation system. The transportation system now includes seven counties and surpasses health needs, including rural transportation for employment, childcare, and leisure (DARTS Brochure, n.d.). This intervention, though not evaluated, shows how programs aimed at increasing healthcare access can expand to provide holistic support for rural communities. This illustrates that transportation expansion across rural communities would decrease the impact of geographical isolation overall, thus aiding rural pediatric patients in accessing healthcare.

Future Research

The prevalence of underserved pediatric patients within rural areas provides room for further exploration of what factors contribute to the disparity, as well as further assessment of rural healthcare infrastructure. Understanding cultural ideals and common practices within rural contexts can offer valuable information in regard to the rural environment's impact on health and access to care. Additionally, further research is needed to understand how the capacity of rural healthcare facilities can be systematically improved for pediatric populations.

Limitations

The main limitation of this literature is that only twenty articles were utilized. The limited number of analyzed articles makes this review unable to encapsulate the broad scope of pediatric healthcare access in rural settings, limiting this study's findings and results. Articles were primarily focused on rural settings, meaning the findings are not generalizable to broader U.S. populations. The data collected within numerous articles was collected as secondary data, potentially allowing for researcher bias in data source selection. This review also did not highlight varying demographics, such as ethnicity, race, or income. Regarding healthcare access, certain demographics have additional disparities that may have confounded their findings.

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Conclusion

Increased understanding of rurality's direct impact on pediatric healthcare access is imperative for the bettering of rural children's health. Rural children are disproportionately impacted by poor health outcomes and premature mortality due to lack of pediatric patient understanding, unattainable preventative care, and geographic barriers. Efforts to improve rural pediatric health outcomes are in place but must be further expanded into widespread practice. The current efforts focus on removing rurality-imposed barriers, such as transportation and geographical distance, while improving healthcare access among pediatric specific care, preventative treatment, and emergency care. Continuous advocacy and education for existing providers, as well as invention and implementation of accessible rural-based practices are necessary to improve rural pediatric patients' health outcomes and healthcare accessibility. This review's findings can be further used to lead local or statewide interventions, specifically targeting rural infrastructure in terms of pediatric healthcare access.

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